4.4 AIR QUALITY

This section summarizes the local climate and current air quality conditions in the vicinity of the proposed Project, as well as the regulatory setting related to air quality in the Project area. Air quality impacts associated with the proposed Project, Project alternatives and cumulative impacts are also discussed. As necessary, MMs are provided.

Information contained in this section was derived from Venoco, Inc.'s Recommissioning Plan for Lease PRC 421 (May 2004), emission inventories for Venoco facilities affecting the ambient air quality in the region, including the EMT, EOF, and Platform Holly, from the California Air Resources Board (CARB), and the Santa Barbara County APCD. Emission inventories for these facilities have been compiled based on actual operating data and on the potential to emit (emissions at permitted operational limits) for each facility.

This document incorporates by reference the findings of the EMT EIR regarding air quality summarizes these findings where appropriate. Where this document relies upon MMs contained in the EMT EIR to address Project impacts, these are summarized to permit report reviewers to understand their relationship to the Project. This document also incorporates data from County of Santa Barbara 01-ND-34 and city of Goleta 06-MND-01.

4.4.1 Environmental Setting

Regional Overview

The climate of Santa Barbara County is classified as Mediterranean, characterized by warm, dry summers and mild winters with moderate precipitation. Temperatures are milder near the coastline than inland, with average daily summer highs of 70 degrees Fahrenheit (°F) and average daily winter lows of 40 °F. Inland areas experience a wider range of temperatures, from an average summer high in the 80s and 90s to an average winter low in the 30s. Most precipitation occurs during the months of November through April, with annual rainfall ranging from 10 to 18 inches along the coast, while slightly greater amounts fall in the higher elevations. Prevailing winds in the coastal region are from the west/northwest during the day, with an average speed of 7 to 12 miles per hour. Evening winds blow from the east, as the air over the Pacific Ocean cools and creates a low pressure zone.

Several types of inversions are common to the area. In winter, weak surface inversions occur, caused by cooling of air in contact with the cold surface of the earth. During spring and summer, marine inversions occur when cool air from over the ocean intrudes under the warmer air that lies over the land. During the summer, the high pressure systems can cause the air mass to sink, creating a subsidence inversion.

Topography plays a significant role in affecting the direction and speed of winds. During the months of May to October, inversions commonly form in the Project area. Year round, light onshore winds hamper the dispersion of primary pollutants, and the orientation of the inland mountain ranges interrupt air circulation patterns. Pollutants become trapped, creating ideal conditions for the production of secondary pollutants in the coastal zones.

Air Quality

Air quality is defined by ambient air concentrations of specific pollutants which have been determined to be of concern with respect to the health and welfare of the general public. The pollutants of concern are: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfates, lead (Pb), H_2S, vinyl chloride, and visibility reducing particles. Ambient air quality standards have been established by the CARB for each of these pollutants and by the U.S. EPA for CO, SO_2, NO_2, O_3, PM_{10}, $PM_{2.5}$, and Pb. The California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS) are summarized in Table 4.4-1.

Air quality at a given location can be described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed ppm or micrograms per cubic meter ($\mu g/m^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national and/or State ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected and include a reasonable margin of safety to protect the more sensitive individuals in the population.

Criteria Pollutants and Air Monitoring. Criteria air pollutants are defined as pollutants for which the Federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The Federal and State standards have been set at levels above which concentrations generally could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort, with a margin of safety. Ambient air quality for the Project area from 2002 to 2004 is summarized in Table 4.4-2.

Table 4.4-1. Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standards [a, c]	National Standards [b]	
			Primary [d]	Secondary [c, e]
O_3	1-hour [b] 8-hour [a]	0.09 ppm (180 µg/m^3) 0.07 ppm (137 µg/m^3)	0.12 ppm (235 µg/m^3) 0.08 ppm (157 µg/m^3)	0.12 ppm (235 µg/m^3) 0.08 ppm (157 µg/m^3)
CO	8-hour 1-hour	9.0 ppm (10 mg/m^3) 20.0 ppm (23 mg/m^3)	9.0 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	NS NS
NO_2	Annual Avg. 1-hour	NS 0.25 ppm (470 µg/m^3)	0.053 ppm (100 µg/m^3) NS	0.053 ppm (100 µg/m^3) NS
Sulfur Dioxide, SO_2	Annual Avg. 24-hour 3-hour 1-hour	NS 0.04 ppm (105 µg/m^3) NS 0.25 ppm (655 µg/m^3)	0.03 ppm (80 µg/m^3) 0.14 ppm (365 µg/m^3) NS NS	NS NS 0.5 ppm (1,300 µg/m^3) NS
PM_{10}	Ann. Arith. Mean 24-hour	20 µg/m^3 50 µg/m^3	50 µg/m^3 150 µg/m^3	50 µg/m^3 150 µg/m^3
$PM_{2.5}$	Ann. Arith. Mean 24-hour	12 µg/m^3 NS	15 µg/m^3 65 µg/m^3	15 µg/m^3 65 µg/m^3
Sulfates (SO_4 [b])	24-hour	25 µg/m^3	NS	NS
Pb [f]	30-day Avg. Calendar Qtr.	1.5 µg/m^3 NS	NS 1.5 µg/m^3	NS 1.5 µg/m^3
H_2S	1-hour	0.03 ppm (42 µg/m^3)	NS	NS
Vinyl Chloride [f]	24-hour	0.010 ppm (26 µg/m^3)	NS	NS
Visibility Reducing Particles	1 Observation	Insufficient amount to reduce the prevailing visibility[g] to less than 10 miles when the relative humidity is less than 70 percent (California only).		

Notes: ppm = parts per million by volume (micromoles of pollutant per mole of gas) µg/m^3 = microgram/cubic meter; mm = millimeter; NS = No Standard; Avg. = Average; Ann. Arith. Mean = Annual Arithmetic Mean.

[a] California standards for O_3, CO, SO_2 (1-hour), NO_2, $PM_{2.5}$ and PM_{10} are values that are not to be exceeded. SO_4^{-2}, Pb, H_2S, Vinyl Chloride, and visibility-reducing particles standards are not to be equaled or exceeded. Sulfates are pollutants that include SO_4^{-2} ion in their molecule. CA 8-hr O_3 standard is effective as of May 17, 2006.

[b] National Standards, other than O_3 and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The O_3 Standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. National 1-hour O_3 standard was revoked on June 30, 2005.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units in parentheses are based upon reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar). All measurements of air quality are to be corrected to these reference conditions.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the U.S. EPA.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the U.S. EPA.

[f] The CARB has identified Pb and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[g] Prevailing visibility is defined as the greatest visibility, which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Source: CARB 2003.

Table 4.4-2. Ambient Air Quality Summary for the Project Area, 2002 through 2004

			Maximum Observed Concentration (# of Days Standard was Exceeded) [a]	
Pollutant		**Year**	**Goleta - Fairview**	**Santa Barbara**
O_3, ppm	1-hour 8-hour	2002	0.070 (0) 0.060 (0)	0.076 (0) 0.061 (0)
	1-hour 8-hour	2003	0.097 (1 day) 0.071 (0)	0.079 (0) 0.070 (0)
	1-hour 8-hour	2004	0.092 (0) 0.087 (1 day)	0.095 (1 day) 0.085 (1 day)
CO, ppm	8-hour	2002	1.13 (0)	NA
	8-hour	2003	1.13 (0)	2.33 (0)
	8-hour	2004	0.95 (0)	1.93 (0)
NO_2, ppm	1-hour Annual Average	2002	0.063 (0) 0.011	NA NA
	1-hour Annual Average	2003	0.051 (0) 0.011	0.059 (0) NA
	1-hour Annual Average	2004	0.043 (0) NA	0.063 (0) NA
SO_2, ppm	1-hour Annual Average	2002	0.001 (0) NA	NA NA
	1-hour Annual Average	2003	0.003 (0) NA	NA NA
	1-hour Annual Average	2004	0.001 (0) NA	NA NA
$PM_{2.5}$, µg/m^3	24-hour Ann. Arith. Mean	2002	NA NA	NA NA
	24-hour Ann. Arith. Mean	2003	NA NA	24.0 (0) NA
	24-hour Ann. Arith. Mean	2004	NA NA	22.2 (0) NA

Notes: The values are provided in the units promulgated by the U.S. EPA; NA = No data available (the monitoring station does not monitor this pollutant); Ann. Arith. Mean = Annual Arithmetic Mean.

[a] Number or percent of exceedances of the most restrictive standard (usually, the State Standard).

Source: CARB 2005a.

The Santa Barbara County is classified as being in attainment or unclassified for all criteria pollutants with the exception of the California standard for PM_{10} and the one hour standard for ozone, as shown in Table 4.4-3. Monitoring is performed to demonstrate attainment or nonattainment of national and State ambient air quality standards. The following discussion provides a description of the criteria air pollutants of concern for Santa Barbara County.

Table 4.4-3. Attainment Status of Santa Barbara County

1-hour O_3 [a]		Fed 8-hour O_3	CO		NO_2		SO_2		Fed $PM_{2.5}$	PM_{10}	
CA	Fed		CA	Fed	CA	Fed	CA	Fed		CA	Fed
N	NA	A	A	A	A	U/A	A	U/A	U/A	N	U

Notes: CA = California State Standards; A = Attainment of Standards; N = Nonattainment; U = Unclassified; U/A = Unclassified/Attainment, NA = not applicable.

[a] National 1-hour O_3 standard was revoked on June 30, 2005 with all applicable designations.

Source: CARB 2004.

Ozone (O_3). The most widespread air quality problem in the State, O_3, is a colorless gas with a pungent, irritating odor. O_3 is not emitted directly into the atmosphere; it is formed primarily when ROCs and NO_x react in the presence of sunlight. O_3 may pose its worst health threat to those who already suffer from respiratory diseases; however, it also harms healthy people. The health effects of O_3 can include reduced lung function, aggravated existing respiratory illness, and irritated eye, nose, and throat tissues. Chronic exposure can cause permanent damage to the alveoli of the lungs.

Sulfur Dioxide (SO_2). SO_2 is a colorless gas. At high concentrations, it has a pungent, irritating odor. In the atmosphere, it reacts with oxidants or particles to form sulfates and sulfuric acid particles in equilibrium, both of which are more hazardous than the original SO_2. The main sources of SO_2 are fuel burning and metal ore processing. Sulfur is an impurity in fossil fuels (especially coal) and in many ores. The Santa Barbara County has been in attainment with the California and national SO_2 standards for the last ten years.

Lead (Pb). Pb in the atmosphere occurs as PM. The combustion of leaded gasoline is the primary source of Pb emissions in the South Coast Air Basin. Other sources of Pb include the manufacturing of batteries, paint, ink, ceramics, and ammunition and secondary Pb smelters. With the phase-out of leaded gasoline, secondary Pb smelters, battery recycling, and manufacturing facilities are becoming Pb emission sources of greater concern.

Prolonged exposure to atmospheric Pb poses a serious threat to human health. Health effects associated with exposure to Pb include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level Pb exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance (including intelligence quotient performance, psychomotor performance, and reaction time) and growth. The county is in attainment with the NAAQS and the CAAQS for Pb.

Nitrogen Dioxide (NO_2). NO_2 is a by-product of fuel combustion. The principal form of nitrogen oxide (NO) produced by combustion is nitric acid, but NO reacts quickly to form NO_2, creating the mixture of NO and NO_2 commonly called nitrous oxide (NO_x). NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 to 3 years old) also has been observed at concentrations below 0.3 ppm. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM_{10}. Santa Barbara County is in attainment of the California and national 1-hour and 8-hour NO_2 standards.

Carbon Monoxide (CO). Automobiles and other types of motor vehicles are the main source of CO pollution in Santa Barbara County. CO gas is colorless and odorless, which adds to its danger. CO concentrations typically peak nearest a source, such as roadways, and decrease rapidly as distance from the source increases. In high concentrations, CO can cause physiological and pathological changes, and ultimately death, by incapacitating the red blood cells and interfering with their ability to carry oxygen to body tissues. The symptoms of excessive exposure – headaches, fatigue, slow reflexes, and dizziness – also can occur in healthy people. Santa Barbara County is in attainment of the California and national one-hour and eight-hour CO standards.

Fine Particulate Matter (PM_{10} and $PM_{2.5}$). PM_{10} and $PM_{2.5}$ consist of extremely small suspended particles or droplets that are 10 and 2.5 micrometers or smaller, respectively, in diameter that can lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from such sources as road dust, diesel soot, combustion products, abrasion of tires and brakes, demolition operations, and windstorms. They also are formed in the atmosphere from NO_2 and SO_2 reactions with ammonia. PM_{10} and $PM_{2.5}$ scatter light and significantly reduce visibility.

PM_{10} and $PM_{2.5}$ pose a serious health hazard, alone or in combination with other pollutants. More than half of the smallest particles inhaled would be deposited in the lungs and can cause permanent lung damage. Fine particulates also can have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of an absorbed toxic substance. Santa Barbara County is in exceedance of the California 24-hour PM_{10} standard (see Table 4.4-3). Santa Barbara County is Unclassified for the recently added State $PM_{2.5}$ Standard.

Hydrogen Sulfide (H_2S). H_2S is an odorous, toxic, gaseous compound that can be detected by humans at very low concentrations. Concentrations detectable by smell (this can vary from 0.5 parts per billion [ppb] detected by 2 percent of the population to 40 ppb, qualified as annoying by 50 percent of the population) are significantly lower than concentrations that could affect human health (2 ppm [2,000 ppb] can cause headaches and increased airway resistance in asthmatics; inhalation of 600 ppm is lethal). The gas is produced during the decay of organic material and is also found naturally in petroleum and natural gas. The county is in attainment of the H_2S standard.

Toxic Air Contaminants (TACs). TACs are compounds that are known or suspected to cause short-term (acute) and/or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects. Sources of TACs within Santa Barbara County include industrial processes, gasoline stations, paint and solvent operations, and fossil fuel combustion. In 1998, CARB identified diesel particulate matter (DPM) as a TAC based on its potential to cause cancer, premature deaths, and other health problems. DPM is a by-product of the diesel fuel combustion process that is emitted in the exhaust from various sources such as construction heavy equipment, trucks, and marine vessels. The most vulnerable subpopulations are those with preexisting respiratory or cardiovascular disease, especially the elderly. In addition, increased hospital admissions and morbidity from respiratory disease have been associated with PM exposure in adults and children. PM exposure is associated with an increased risk of lung cancer in epidemiological studies (CARB 2005b).

Regional Emissions

Emissions within the County are estimated annually by the Santa Barbara APCD. Table 4.4-4 lists the estimated emissions by source category.

Odor Issues Associated with Oil and Gas Production Facilities and PRC 421

Oil production facilities typically produce odors that can be objectionable to the public; of particular concern is H_2S. Facilities directly associated with the proposed Project, including the EMT and barge Jovalan, have historically have produced odors that have generated complaints from the public. The EOF has also generated complaints and has been the subject of an abatement order from APCD (see alternatives below for additional discussion). Typically, the APCD receives at least 20 nuisance odor complaints per year associated with emissions from the EMT area; however, from the period August 2003, to April 2005, there was only one instance of a series of odor complaints attributed to the EMT operations.

Table 4.4-4. 1999 Emission Inventory for Santa Barbara County

Emission Sources [a]	CO tons/yr (mt/yr)	ROC tons/yr (mt/yr)	NO_x tons/yr (mt/yr)	SO_2 tons/yr (mt/yr)	PM_{10} tons/yr (mt/yr)
Stationary	11,416 (10,356)	3,059 (2,775)	2,001 (1,815)	835 (757)	414 (375)
Area-Wide	7,426 (6,736)	3,271 (2,967)	551 (499)	8 (7)	6,443 (5,844)
Mobile	76,087 (69,024)	9,379 (8,508)	15,319 (13,897)	751 (681)	370 (335)
Natural	10,298 (9,342)	28,930 (26,244)	1,365 (1,238)	0	2,025 (1,837)
All Sources	95,227 (86,388)	44,639 (40,495)	19,236 (17,450)	1,594 (1,446)	9,253 (8,394)

Notes: mt/yr = metric tons per year.

[a] Petroleum activities are a part of Stationary Sources.

Source: Santa Barbara County APCD 2001.

The APCD conducts investigations to determine the source of odor complaints. They are required to conduct an investigation if there are five or more complaints at a time but typically investigate every complaint. The West Campus Air Monitoring Station, located immediately east of the EMT on the Coal Oil Point Reserve, monitors total Hydrocarbons, SO_2 and H_2S concentrations in the atmosphere. The typical concentration of H_2S measured at the station is 0 to 2 ppb. Spikes of 3 ppb are recorded several times per year. Only one to four spikes over 3 ppb are recorded at the station per year (based on the data from 2002 to 2005). Analysis has indicated that there is no obvious correlation between the H_2S concentration spikes and barge loadings (CSLC 2006).

Some odor events could be attributed to natural gas seeps present in the vicinity of Platform Holly and the barge Jovalan mooring location. Natural gas seeps are a documented phenomenon caused by the leaking of oil and gas from the sea-floor. Off Coal Oil Point, portions of these seeps are captured by a large subsea metal pyramid "tent" installed in the 1980s. However, these natural seeps also occur in other locations off of Coal Oil Point where they are not captured but escape into the atmosphere, and create odors if H_2S is present in the gas.

As noted in Section 4.2, Safety, the crude oil produced from PRC 421 is "sweet" crude, referring to its low sulfur and H_2S content. Crude produced from the South Ellwood Field (Platform Holly) contains much higher concentrations of sulfur and H_2S (see Table 4.2-3). The H_2S content in PRC 421 crude oil is approximately 10 ppm, and below levels at which H_2S is considered to be a potential source of injury to humans (see Section 4.2, Safety, for a complete discussion). The crude oil that would be produced by the Project and transported through Line 96 to the EMT and barge would not be a

source of acute toxic impacts to human receptors if released and is not expected to be a source of odors that would be a nuisance to the public.

Greenhouse Gases and Global Climate Change

Global climate change is a change in the average weather of the earth which can be measured by wind patterns, storms, precipitation, and temperature. Scientific consensus has identified that the human-related emission of greenhouse gases (GHGs) above natural levels is a significant contributor to global climate change. GHGs are gases that trap heat in the atmosphere and regulate the Earth's temperature and include water vapor, carbon dioxide (CO_2), methane, NO_x, chlorofluorocarbons (CFCs), and O_3.

The primary activities sectors associated with GHG emissions include transportation, utilities, industry/manufacturing, agriculture, and residential (CEC 2005). End-use sector sources of GHG emissions in California are as follows: transportation (40.7 percent), electricity generation (22.2 percent), industry (20.5 percent), agriculture and forestry (8.3 percent), and other (8.3 percent) (CEC 2005). The main sources of increased concentrations of GHGs due to human activity include the combusion of fossil fuels and deforestation (CO_2); livestock and paddy rice farming, land use and wetland depletions, and landfill emissions (methane); refrigeration systems and fire suppression systems use and manufacturing (CFCs); and agricultural activities, including the use of fertilizers (NO_x).

Climate change could potentially affect other resource areas, including hydrological resources, economical resources, and biological resources. Projected impacts to the local region caused by climate change include: decreases in the water quality of surface water bodies, groundwater, and coastal waters; sea level rises; increased flooding and fire events; decline in aquatic ecosystem health; lowered profitability for water-intensive crops; changes in species and habitat distribution; and impacts to fisheries (California Regional Assessment Group 2002).

4.4.2 Regulatory Setting

Federal, State, and local agencies have established standards and regulations that govern the proposed Project. A summary of the regulatory setting for air quality is provided below.

Federal

United States Environmental Protection Agency

The Federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. U.S. EPA is responsible for implementing most aspects of the CAA. Basic elements of the Act include NAAQS for major air pollutants, hazardous air pollutant standards, State attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions.

The CAA requires U.S. EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. NAAQS are shown in Table 4.4-1.

In November 1990, Congress enacted a series of amendments to the CAA intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 amendments to the CAA was an overhaul of the planning provisions for those areas not currently meeting NAAQS. The CAA identifies specific emission-reduction goals, requires a demonstration of reasonable further progress and attainment, and incorporates more stringent sanctions for failure to attain the NAAQS or to meet interim attainment milestones. States with nonattainment areas must prepare a State Implementation Plan (SIP) that demonstrates how those areas will achieve attainment.

State

California Air Resources Board

The California Clean Air Act (CCAA) was signed into law on September 30, 1988. Through its many requirements, the CCAA serves as an important consideration in attainment planning efforts. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the CCAA, responding to the Federal CAA, and regulating emissions from motor vehicles and consumer products. The mission of CARB is to promote and protect public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants, while recognizing and considering the effects on the economy of the State.

CARB sets air quality standards for the State at levels to protect public health and welfare with an adequate margin of safety. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered in "attainment" if pollutant levels are continuously below or equal to the standards and violate the standards no more than once each year. California standards are generally more stringent than the national standards. The CAAQS are shown in Table 4.4-1.

California Assembly Bills

California Assembly Bill (AB) 32, California Global Warming Solutions Act of 2006, requires a significant reduction in state GHG. Emissions levels are required to be reduced to 2000 levels by 2010, to 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The emissions reduction is expected to be achieved through the continuation of existing state policies, and through the enforcement of a statewide GHG emissions limit (to be incorporated starting in 2012). Existing policies aimed at limiting GHG emissions include AB 1493 (the Pavley Bill), which defines standards for cars and light trucks and is projected to result in an 18 percent reduction in emissions.

West Coast Initiative

The State of California West Coast Initiative involves a joint strategy with the states of Washington and Oregon to purchase fuel-efficient vehicles for official use, develop uniform appliance efficiency standards, reduce the use of diesel generators on ships in state ports, and collaborate to measure and report GHG emissions.

Santa Barbara County APCD

As directed by the Federal and State Clean Air Acts, local air districts are required to prepare plans with strategies for attaining and maintaining State and Federal O_3 standards. In order to ultimately achieve the air quality standards, the rules and regulations limit emissions and permissible impacts from activities within the local air districts. Some rules also specify emission controls and control technologies for each type of emitting source. The regulations also include requirements for obtaining an Authority To Construct (ATC) permit and a permit to operate (PTO).

The Santa Barbara County APCD is the agency with jurisdiction over air quality attainment in Santa Barbara County. All aspects of the proposed Project and Alternatives occurring in Santa Barbara County must obtain an APCD permit, if

applicable. The APCD also has jurisdiction over OCS sources located within 25 miles (40 kilometers [km]) of the seaward boundaries of the State of California (Rule 903). Increases in emissions of any non-attainment pollutant or its pre-cursor from a new or modified project that exceed the thresholds identified in the APCD Rule 801.E are required to be mitigated.

4.4.3 Significance Criteria

Construction Thresholds

Emissions from construction activities are generally short-term and temporary. Neither Santa Barbara County nor the APCD have daily or quarterly quantifiable emission thresholds established for short-term construction emissions. Pursuant to APCD Rules 202 and 804, construction emissions of any criteria pollutant should not exceed 25 tons per year. PM_{10} emissions should be estimated and standard mitigation measures implemented, as required in the 1979 Air Quality Attainment Plan (Santa Barbara County APCD 2005).

Operational Thresholds

PRC 421 has not been operational for 13 years, since 1994 when the facility was shut in after emergency repairs and clean–up were competed after the leak in the PRC 421 6" delivery line. As such, the project has been without emissions since that time and although the facility has existing permits to operate from the APCD, (PTO Nos. 8232-R5 and 8233-R5), the emissions permitted under these PTOs are outdated by more than a decade and were tailored to a facility employing different technology. Therefore, for the purposes of this analysis impacts to air quality from operations are compared to the existing physical environmental baseline which is zero emissions. Impacts are considered to be to be significant if operation of the Project would:

- Emit (from all Project sources, both stationary and mobile) more than the daily trigger for offsets or Air Quality Impact Analysis set in the APCD New Source Review Rule, for any pollutant *(i.e., 55 pounds/day for ROC or NO_x; and 80 lbs/day for PM_{10}. There is no daily operational threshold for CO; it is an attainment pollutant*);

- Emit more than 25 pounds per day of NO_x or ROC from motor vehicle trips only;

- Not cause or contribute to a violation of any California or National Ambient Air Quality Standard (except ozone);

- Not exceed the APCD health risk public notification thresholds adopted by the APCD Board (see Section 4.3.5, Hazardous Materials, Impacts of Alternatives); and

- Not be consistent with the adopted Federal and State air quality plans for Santa Barbara County.

Cumulative impacts would be deemed significant if the proposed Project is found to have an individually significant air quality impact.

4.4.4 Impact Analysis and Mitigation

The analysis of air quality impacts follows guidance provided by the Santa Barbara APCD Scope and Content of Air Quality Sections in Environmental Documents (October 2006) and the CEQA guidelines. Air quality impacts associated with recommissioning PRC 421 are expected as a result of construction and operations of the proposed Project. Construction emissions would include particulate and combustion emissions associated with grading and trenching for the purpose of placing two new 2-inch pipelines, repairing an existing 6-inch line, installation of new power cables, combustion emissions from travel on access roads, operation of the drill rig during installation of the ESP, and repairs to the caisson wall. These emissions were estimated using emission factors and equipment estimates from Venoco Inc.'s Recommissioning Plan for Lease PRC 421 (May 2004). Operational emissions from primary Project components would consist primarily of fugitive emissions from valves, pressure relief devices on the separators, piping components, well heads, and well cellars. Operational emissions from secondary Project components would consist primarily of emissions from diesel engines on barge Jovalan and support vessels and fugitive emissions from the EMT and barge Jovalan during loading operations. Operational emissions were calculated using emissions factors from the EMT EIR and those provided by Santa Barbara County APCD. Anticipated emissions from barge Jovalan could vary substantially depending upon the destination port for the oil shipments. Historically, oil shipments have been sent to the Port of Long Beach, which is approximately a 10-hour trip from the EMT. However, Venoco maintains the flexibility to utilize San Francisco Bay Area ports, which is an approximately 30-hour trip from the EMT. The following impact analysis is based on the worst-case assumption for peak daily emissions that Venoco would ship oil to the Bay Area.

Impact AQ-1: Increase in Emissions from Construction

Construction of the proposed Project could potentially result in increased emissions at the Project site (Less than Significant, Class III).

Impact Discussion

The proposed Project would involve construction activity that would generate temporary air pollutant emissions. These emissions would be generated by a variety of specific activities, including removal of existing structures, trenching, use of heavy construction equipment, construction worker trips, and delivery of building materials and equipment. Table 4.4-5 shows the estimated emissions associated with construction of the proposed Project. The equipment list and emissions factors were taken from Venoco Inc.'s Recommissioning Plan for Lease PRC 421, May 2004. It is assumed that construction activities would take place over approximately 45 days and that construction activities would generally occur eight hours per day, five days per week. For purposes of estimating truck traffic to the construction site, a single vehicle of each type was used, and the number of miles traveled inflated. This approach allows for a conservative estimate of traffic emissions in the absence of actual truck trip numbers. Assumptions are shown in the table and footnotes. As indicated in Table 4.4-5, construction activity associated with the proposed Project would generate construction emissions due to construction equipment and from traffic associated with construction workers and the delivery of building materials and equipment. Over the life of the Project, worst-case emissions from construction activities are estimated at 1.166 tons for NO_x, 0.131 tons for ROC, 0.522 tons for CO, 0.031 tons for SO_2, and 0.142 tons for PM_{10}.

Table 4.4-5. Estimated Project Emissions

	NO_x tons	**ROC tons**	**CO tons**	**SO_2 tons**	**PM_{10} tons**
Construction Equipment	1.16	0.13	0.51	0.03	0.14
Construction Traffic	0.006	0.001	0.012	0.001	0.002
Total	*1.166*	*0.131*	*0.522*	*0.031*	*0.142*
Significance Thresholds (tons/year)	25	25	25	25	25
Are Thresholds Exceeded?	No	No	No	No	No

As stated above, neither Santa Barbara County nor the APCD have established thresholds of significance for construction emissions but the APCD generally considers emissions of any criteria pollutant that exceed 25 tons per year to be significant. The emissions from the construction of the proposed Project would be well below this level and therefore, impacts to air quality from construction emissions would not be significant. Nevertheless, mitigation is required for all construction activities to minimize emissions of ozone precursors, fugitive dust, and particulate emissions from diesel exhaust, which are classified as carcinogenic by the State of California.

Mitigation Measures

The estimated emissions presented in the table are shown without mitigation applied. The following MMs should be incorporated into the construction phase of the Project, to reduce impacts as much as feasible.

MM AQ-1a. Prohibit Unnecessary Truck Idling. The construction contractor should limit unnecessary truck idling on site in excess of five minutes.

MM AQ-1b. Use of Diesel Emission Reduction Measures. The construction contractor should utilize heavy construction equipment equipped with diesel particulate filters or oxidation catalysts. The construction contractor should also use emulsified diesel fuel in construction equipment where possible. According to the specifications presented for particulate filters from CARB, particulate filters can reduce NO_x emissions by 1.6 to 18 percent, and particulate matter emissions can be reduced by 20 percent to 62.9 percent. Combined use of diesel particulate filters/catalysts are available for certain models of engines and certain model years that can reduce diesel particulate emissions by 25 percent for Level 1 particulate controls, by 50 percent for Level 2 particulate controls (which includes alternative fuels), and by 85 percent for Level 3 particulate controls. Certain diesel particulate catalysts can also control NO_x emissions by 25 percent. Use of this alternative diesel fuel would reduce NO_x and PM emissions by 14 and 63 percent, respectively, compared to the use of conventional diesel (CARB 2001).

MM AQ-1c. Maintain Construction Equipment. All construction equipment should be properly maintained according to manufacturers' specifications.

MM AQ-1d. Ultra-Low Sulfur Diesel Fuel. The construction contractor should utilize ultra-low sulfur diesel fuel with a sulfur content of 15 ppm in equipment where emulsified diesel fuel is not feasible.

MM AQ-1e. Establish On-Site Equipment Staging Area and Worker Parking Lots. The staging area and worker parking lots should be restricted to either paved surfaces or soil stabilized unpaved surfaces only.

Rationale for Mitigation

Emissions from construction activities would be reduced by idling time restrictions, utilizing emission reduction technologies, properly maintaining equipment to ensure proper working order, using cleaner burning fuels, and reducing activity on unpaved surfaces.

Impact AQ-2: Increase in Emissions from Operations

The proposed Project could potentially result in increased fugitive emissions from facilities at PRC 421 and emissions from transportation of crude, with fugitive emissions from barge Jovalan and various support tugs and vessels expected to exceed threshold values (Significant, Class I).

Impact Discussion

Operational emissions resulting from the proposed Project would consist primarily of fugitive emissions from the tugs and barge Jovalan used in transportation of the crude along with limited emissions from valves, pressure relief devices on the separators, piping components, well heads and well cellars at PRC 421. During the project's first 5 or more years of operation, transportation associated emissions would be from barge Jovalan and assist vessels (i.e., tug vessel) and would result from the operation of the diesel engines which power these vessels as well as emissions from generators and fugitive releases from valves, pressure relief devices, etc. Peak daily fugitive emissions, primarily associated with transportation related activities, are estimated to substantially exceed the daily thresholds of significance for NO_x, as well as those for ROC and PM_{10} and are therefore considered significant (Table 4.4-6).

Table 4.4-6. Estimated Peak Daily Operational Emissions

	Pounds/Day					
	NO_x	**ROC**	**CO**	**SO_x**	**PM_{10}**	**CO_2**
Barge Jovalan	410.60	13.10	90.89	0.16	28.42	17,298
Tug Vessels	1,043.32	60.72	117.24	12.94	62.05	42,344
Fugitive Emissions from Pier	3.196	2.096	NA	NA	NA	NA
Total	*1,457.12*	*75.92*	*208.13*	*13.1*	*90.47*	*59,642*
Significance Thresholds	55	55	NA	NA	80	NA
Are Thresholds Exceeded?	Yes	Yes	NA	NA	Yes	NA

NOTES:

- Emission factor data provided for both the barge and the tug vessels are based upon fuel usage. Fuel use per engine as reported to the APCD on an annual basis was obtained for 2001 to 2003. Fuel use for 2003 was used as the basis because the reported fuel use was higher for 2003 than 2001 or 2002. Annual fuel use for 2003 was used to estimate maximum daily fuel use, and maximum daily emissions as described below.
- The annual number of barge trips for 2003 was 23, all to the Long Beach Terminal. The average amount of fuel per barge trip to Long Beach was estimated by dividing the total annual reported fuel use by the reported number of barge trips.
- The travel time from Long Beach to EMT is 10 hours and from the Shores Terminal to EMT is 30 hours. Therefore, the maximum daily emissions would occur over 24 hours of a 30 hour trip to Shores. Maximum daily fuel use for the 10 hour Long Beach trip calculated from the reported annual fuel use and number of Long Beach trips in 2003 is scaled up from 10 to 24 hours to represent the maximum daily fuel use (fuel use per LB trip x 24/10). The maximum daily fuel use is multiplied by the emission factors based on fuel usage to calculate maximum daily emissions.
- ROC emissions are the sum of transfer emissions and engine emissions.

Mitigation Measures

MM AQ-2a. Vessel Emission Reduction. In order to reduce emissions of NO_x, ROC and PM_{10} as much as feasible, Venoco shall implement the following measures to reduce Project emissions.

(1) Venoco shall fund retrofitting the existing tug and assist vessels with new engines and generators that are as low emission as feasible under the EPA's tiered standards for marine engines; or hire alternate vessels that have emission rates that meet these EPA standards.

(2) Reduce running time of the tug vessel generator engine(s) when the tug vessel is moored at the EMT and is not moving or mooring the barge.

MM AQ-2b. Vessel Operational Modifications. Operators of the tug and assist vessels shall shut off the main and auxiliary engines and generators during loading when not moving or mooring the barge Jovalan, consistent with safe operational practices.

Rationale for Mitigation

The above measures would reduce Project emissions by utilizing lower emission engines and generators or vessels, reducing the amount of time the generators are running, and by prohibiting engines to run when they are not needed over the life of transportation using the EMT and barge Jovalan. If the main engines and generators on the tug and assist vessels are shut off when the vessels are not assisting the barge, the daily emissions from the generators would be reduced.

Residual Impact

Project emissions would result in NO_x, ROC, and PM_{10} emissions above the respective thresholds. Inclusion of MMs AQ-2a and AQ-2b would likely reduce emissions of ROC and PM_{10} to below threshold values; however, emissions of NO_x would continue to exceed peak daily emissions threshold values. Therefore, the Project's contribution to degradation of regional air quality would be significant and unavoidable.

Impact AQ-3: Odor Emissions from Operation

Proposed Project could potentially result in increased nuisance odor events (Potentially Significant, Class II).

Impact Discussion

The areas immediately adjacent to the proposed Project are used for recreational purposes. In addition, there are residential areas and a school within 0.5 miles of the Project site. Thus, releases of odorous compounds such as H_2S or petroleum gases could create nuisance odors, which would be considered a significant impact.

Odors from PRC 421-2 and the barge Jovalan could originate from several sources. Barge loading typically does not emit odorous compounds due to the implemented controls, i.e., vacuum on the holds during loading, vapor control using the VRU, and caustic treatment of H_2S. However, if the pressure safety valves (PSVs) on the barge is held open to the atmosphere due to an overpressure event, which is triggered by pressure of 14 inches of water above atmospheric (0.03 atmospheres gauge or 0.51 psig), odorous compounds would be released to the atmosphere. Any accidental releases, such as crude spills (see Section 4.2, Safety), could also result in odor events.

Potential oil spills could create objectionable odors due to evaporation of odorous compounds (H_2S and ROC) from the spilled oil surface. Any oil spills could generate nuisance odors and thus odor complaints. However, oil produced from the proposed Project is sweet and low in sulfur content, thus odors from the proposed Project due to H_2S are anticipated to be minimal.

The increased barge loadings under the proposed Project could potentially increase releases of odorous compounds to the atmosphere. The Project would also increase the potential for an oil spill. Any increase in odorous compounds releases would be a significant impact as it violates APCD Rule 303 (Class II).

Mitigation Measures

MM AQ-3. Emission Control Devices on the Barge Jovalan. The Applicant shall install proximity switches on the PSVs on the barge Jovalan, to prevent the lifting of the PSVs due to overpressure. The switches shall be telemetered to the control room on the barge and trigger an alarm. The operating procedures shall require immediate shutdown of the pumps in case of overpressure.

Rationale for Mitigation

The above MM would reduce nuisance odors from the proposed Project by reducing emissions from the PSVs and reducing the time to detection of a leak.

Impacts Related to Future Transportation Options

For the purposes of the impact analysis above, it is assumed that Line 96 and the EMT would be used to transport crude oil recovered from PRC 421 using the barge Jovalan to ship the oil to a Los Angeles or San Francisco Bay area refinery through approximately the year 2013. However, as discussed earlier in this EIR (Sections 1.2.4, 2.4.2, and 3.3.6), several options exist for future transportation of oil from the Project. These include ongoing use of the EMT through 2013, use of a pipeline to Las Flores Canyon, and trucking of oil to Venoco's ROSF Facility 35 miles to the south and subsequent transport to Los Angeles via pipeline. The potential air quality impacts from transportation using the existing EMT system are fully described above (see Impacts AQ-2 and AQ-3).

The timing and exact mode of transportation of produced oil after the initial five or more years of Project operation are speculative at this point in time. If neither of these potential additional options is permitted or available by the cessation of operation of the EMT, production from PRC 421 would be stranded, at least temporarily, until an alternative transportation mode is approved and becomes available.

As discussed under project alternatives below, both transportation options are anticipated to create substantially lower emissions than those associated with operations of the EMT and Barge Jovalan and are not anticipated to create significant impacts to air quality.

Table 4.4-7. Summary of Air Quality Impacts and Mitigation Measures

Impact	Mitigation Measures
AQ-1: Increase in Emissions from Construction	**AQ-1a.** Prohibit Unnecessary Truck Idling. **AQ-1b.** Use of Diesel Emission Reduction Measures. **AQ-1c.** Maintain Construction Equipment. **AQ-1d.** Ultra-Low Sulfur Diesel Fuel. **AQ-1e.** Establish On-Site Equipment Staging Area and Worker Parking Lots.
AQ-2: Increase in Emissions from Operation	**AQ-2a.** Vessel Emission Reduction. **AQ-2b.** Vessel Operational Modifications.
AQ-3: Odor Emissions from Operation	**AQ-3.** Emission Control Devices on the Barge Jovalan.

4.4.5 Impacts of Alternatives

No Project Alternative

Under the No Project Alternative, Venoco would not recommission PRC 421, the wells would be shut-in and supporting infrastructure would be decommissioned and either

removed or left in place. This alternative would avoid the impacts of Project start-up and operation. Specifics on decommissioning would be addressed in an Abandonment and Restoration Plan, and related impacts to air quality would be evaluated in applicable environmental documentation such as an MND or an EIR.

No Project Alternative with Pressure Testing

Under the No Project Alternative with Pressure Testing, temporary production facilities and equipment would be installed at PRC 421 in order to allow for temporary oil production to permit flow pressure testing of the existing 421-2 well and the associated reservoir. Flow pressure testing would commence for a period of 6 to 12 months in order to determine the potential of possible pressure increases in the reservoir upon permanent closure of the well at PRC 421. After testing is completed, recommendations would be provided on the ultimate disposition of the surf-zone facilities. Construction activities associated with this alternative would be reduced compared to the proposed Project and given that oil would only be produced and transported for 6 to 12 months, emissions associated with operation of this alternative would also be substantially less than those described for the proposed Project. Therefore, construction impacts to Air Quality associated with this alternative would be less than significant; however, transportation of produced oil via the EMT and barge Jovalan would continue to result in peak daily emissions which exceed adopted thresholds, albeit for a much reduced operational horizon.

Onshore Separation at the EOF

Under this alternative, no separation activities would take place at Pier 421-2. Crude produced from Well 421-2 would be commingled with production from Platform Holly and separated at the EOF. Under this alternative, crude produced from the Project would be commingled with crude produced at Platform Holly entering the EOF and undergo both separation and processing, even though only separation is needed for the light sweet crude produced from PRC 421. Construction activities would be similar to the proposed Project but slightly reduced; however, operational emissions would be the same as described for the Project.

Recommissioning Using Historical Production Methods

Under this alternative, production would resume at PRC 421 in its historic configuration at the time prior to the wells being shut-in in 1994 while incorporating new technologies to comply with current industrial and environmental standards. PRC 421 would utilize a gas-fired internal combustion engine to power the pump at Pier 421-2. Emissions from

construction and operational activities would be slightly higher than the proposed Project due to the use of a gas-fired pump.

Reinjection at Platform Holly

Implementation of this Alternative would resume production at PRC 421 as described under the proposed Project; however, produced water would be sent to Platform Holly, via the EOF, for re-injection and Well 421-1 would be decommissioned under an accelerated schedule. The accelerated decommissioning would require submittal of a decommissioning plan for Pier 421-1 to the CSLC and the City of Goleta within approximately 6 months of approval of this Alternative.

This Alternative would entail installing a flow line that extends from Well 421-2 to the EOF and decommissioning Well 421-1, its caisson, and pier (to be evaluated in a separate analysis). Further, as described in Section 3.3.5, Re-injection at Platform Holly, the 4-inch sub-sea utility pipeline which runs from the EOF to Platform Holly is currently in service providing California Public Utilities Commission-grade (PUC) gas to Holly for use as the flare purge and pilot fuel and fuel for the three Holly drilling generators. Therefore, initial disposal of produced water at Platform Holly would require Venoco to cease using the utility line for natural gas and instead use gas produced at Platform Holly which is high in H_2S. As a result, Venoco has recently approached the APCD to request the use of annulus gas at Holly as an alternative to PUC gas for the flare purge and pilot fuel. Annulus gas has higher sulfur content than PUC gas; therefore, in order to accommodate the use of (or sweeten) the annulus gas, Venoco would need to install new equipment (H_2S scrubbers) and implement operational changes at Platform Holly. These changes are not anticipated to result in any substantial increase in emissions which would exceed any thresholds. Therefore, impacts to air quality under this alternative are anticipated to be substantially the same as those for the proposed project.

Transportation Sub-Alternative Options

Under these sub-alternative options, oil would not be sent to Barge Jovalan for delivery to refineries. Instead, oil would either be transported to the AAPL at Las Flores Canyon by a newly constructed pipeline (see Figure 3.1) or oil would be transported via truck to the ROSF, located east of Carpinteria. Each of these transportation sub-alternative options would create the potential for impacts to air quality as discussed below. It should be noted that a pipeline extending from the EOF to AAPL at Las Flores Canyon is currently proposed as part of the Venoco's Full Field Development, which is currently

under review by CSLC. A draft EIR on this project may be available for public review in 2007, with the potential for the pipeline to become operational as early as 2009-2010. Alternately, such a pipeline could also be considered for construction, absent any lease expansions, to serve only existing or expanded production from Platform Holly as well as that from the recommissioning of PRC 421. Cumulative impacts associated with this pipeline are described in section 4.4.6, Air Quality, Cumulative Impacts.

Pipeline Sub-Alternative

Under this alternative, impacts to air quality would be substantially reduced from those described for the proposed Project. Operational air quality impacts would be substantially less for this option because shipment of oil via pipeline would not generate any of the fugitive emission associated with operation of diesel engines utilized for operation of Barge Jovalan or the assists vessels associated with the proposed project. While operational release from valves at PRC 421 and along the proposed pipeline corridor would continue, such emissions would be relatively minor when compared to the proposed Project and would not exceed adopted thresholds.

Impact AQ-4: Air Emissions from the Pipeline Construction

Pipeline construction would result in less than significant air emissions (Class III).

Impact Discussion

Construction emissions would be due to fuel combustion by the pipeline construction machinery, offsite travel, and fugitive dust emissions due to soil handling during construction. Estimated emissions are summarized in Table 4.4-8. Emissions of the criteria pollutants would not exceed 25 tons (23 metric tons) per year, therefore no mitigation is necessary. As per the significance criteria, dust reduction mitigation measures, i.e., watering of exposed soil, would be required. The impacts would be considered adverse, but less than significant (Class III).

Mitigation Measures

Project impacts would be further reduced by application of **MMs AQ-1a through AQ-1e.**

All other components of the proposed Project would remain the same. Therefore, all potential onsite impacts as described under the proposed Project could potentially occur and all MMs would apply: AQ-1a through AQ-1e.

Table 4.4-8. Summary of the Pipeline Construction Emissions

Emissions Source	Peak Day Emissions, lbs/day					Annual (Total) Emissions, ton/year				
	CO	ROC	NO_x	SO_2	PM_{10}	CO	ROC	NO_x	SO_2	PM_{10}
Onsite Machinery	248.28	17.51	180.18	18.52	13.81	11.79	0.83	8.56	0.88	0.66
Offsite	25.13	5.91	11.22	0.15	0.75	1.19	0.28	0.53	0.01	0.04
Fugitive Dust	-	-	-	-	21.08	-	-	-	-	1.00
Total	*273.40*	*23.42*	*191.40*	*18.67*	*35.65*	*12.99*	*1.11*	*9.09*	*0.89*	*1.69*

Notes: 1 ton = 0.9 metric ton. 1 lb = 0.5 kg; source, EMT EIR.

Trucking Sub-Alternative

Under this option, crude oil would be transported by truck from the EMT to the ROSF south of Carpinteria. Based on the description of this alternative, this would involve a maximum of 5 industry standard tandem tanker trucks per day during the peak first year of production, declining thereafter (see Table 3-2, page 3-19). Emissions from tanker truck delivering crude from the EOF to the ROSF is estimated to be 13.5 pounds of NO_x, 1.3 pounds of ROC, 11.6 pounds of CO, 1,288 pounds of CO_2, 0.01 pounds of SO_x, and 0.50 pounds of PM_{10}, which would be below the thresholds of significance, therefore operational impacts associated with this transportation method are expected to be less than significant. Emissions from operations of the proposed Project would not contribute to an exceedance of air quality thresholds. Therefore, operational emissions would be an adverse but not significant impact to local air quality (Class III).

Table 4.4-9. Estimated Daily Operational Emissions

	Pounds/Day					
	NO_x	ROC	CO	SO_x	PM_{10}	CO_2
Trucking	13.5	1.3	11.6	0.01	0.50	1,288
On Road	NA	NA	NA	NA	15.9	NA
Fugitive Emissions from Pier	3.196	2.096	NA	NA	NA	NA
Santa Barbara APCD Significance Thresholds	25	25	NA	NA	NA	NA
Trucking Significance Threshold	25	25	NA	NA	NA	NA
Are Thresholds Exceeded?	No	No	NA	NA	NA	NA
Are Trucking Thresholds Exceeded?	No	No	NA	NA	NA	NA

Under the Transportation Sub-Alternative Options, direct project impacts associated with construction at PRC 421 and operation of the facility itself, absent transportation, would remain the same and MM AQ-1a thorough 1e would still apply.

4.4.6 Cumulative Projects Impact Analysis

Impacts from the proposed Project were assessed in conjunction with the cumulative Projects identified in Table 3-2.

Impact AQ-5: Project Would Contribute to Cumulative Air Quality Impacts

The Project would contribute to the cumulative increase in emissions in the air basin, which is currently in non-attainment for ozone and PM_{10} (Significant, Class I).

Impact Discussion

There are several industrial and oil development projects proposed in the South Central Coast Air Basin (see Section 3.4, Cumulative Projects). These projects are individually likely to have significant air quality impacts. The projects that are likely to have significant air quality impacts include the two LNG terminals and the Paredon and Full Field Development projects. The Cabrillo Port and Platform Grace/Northern Star Natural Gas LNG terminal Projects are located 47 miles and 29 miles southeast from the EMT, respectively. The Paredon Project is located approximately 25 miles southeast of the proposed Project site. The Ellwood Full Field Development project is located in the proposed Project area, but would eliminate the need for the EMT and barge operations.

The Project would contribute to the cumulative increase in emissions in the air basin, which is currently in non-attainment with California ozone and PM_{10} standards. Due to emissions associated with the proposed Project and the distances of the other industrial projects that are likely to have significant air quality impacts, the proposed barge-related emissions associated with the Project would contribute to significant cumulative air quality impacts.

Other residential, commercial, institutional, or recreational projects in the project area may have significant air quality impacts. For example, residential projects proposed for the project area would have significant air quality impacts since the homes would have wood-burning fireplaces rather than gas-burning ones. Combined with these energy-related and residential projects, the proposed Project would have significant air quality impacts (Class I).

Mitigation Measures

Implementation of MMs AQ-1a through AQ-1e and MMs AQ-2a and AQ-2b would be required.

Rationale for Mitigation

Implementation of Project-specific mitigation measures would help to reduce air quality impacts.

Residual Impact

Even with specific measures to reduce project-related air quality impacts, cumulative impacts to air quality would remain significant.

Global Climate Change

The proposed Project would generate emissions of GHGs that are known to contribute to global climate change. The majority of Project emissions of GHGs would be CO_2, and Project construction would directly contribute approximately 462.5 tons of carbon dioxide to the atmosphere (Appendix D). Further, known emissions from project operation, particularly emissions from barge Jovalan and assist vessels, would contribute in excess of 1,900 tons over the first five years of operation. Depending on the transportation mode after 2013 or 2016, annual CO_2 emissions would range from up to 200 tons per year for use of barge Jovalan to 94 tons per year for shipment by tanker truck. However, the production of GHG emissions from construction and operations by the proposed Project would be reduced by the implementation of MM AQ-1a, MM AQ -1b, MM AQ-2a, and MM AQ -2b. CO_2 emissions from pipeline transport are expected to be negligible.

Approximately 1,419 thousand barrels of oil would be produced over the life of the proposed Project. As discussed in Section 4.14 Energy and Mineral Resources, California's oil refineries processed approximately 674,276 thousand barrels of crude oil into a variety of products in 2005. The total amount of oil produced over the estimated 12-year production period of the Project represents approximately 0.21 percent (approximately 0.04 percent at peak year production) when compared to California supplies in 2005 (674,276 thousand barrels). This is a nominal amount of production compared to California's existing oil and gas supplies and is difficult to determine if there would be any affect on the current demand and consumption of oil and gas.

Based on estimates of petroleum products yielded from one barrel of crude oil in California provided by the California Energy Commission (CEC) and CO_2 emission factors from the Energy Information Administration (EIA), end uses of the estimated total oil produced from the proposed Project (1,419 thousand barrels) could potentially produce a total of approximately 565,909 tons (509,318 metric tons) of CO_2 (CEC 2005; EIA 2006). See Appendix D for CO_2 emissions by oil product per barrel. These emissions from the refined oil produced from PRC 421 represent approximately 0.10 percent (approximately 0.02 percent at peak year production) of the 492 million metric tons of CO_2-equivalent GHG emissions produced in California in the year 2004 (CEC 2006). This is a gross estimate of GHG emissions from the eventual use of refined oil generated by the proposed Project based on the given figures from the CEC. Determining the exact products yielded and emission comparisons from oil produced from PRC 421 throughout its production period is speculative and subject to change depending on the refineries processing the oil, the CO_2 emissions from varying fuel products, and the varying sources consuming such products. As provided above, it is difficult to determine if this Project will have an effect on the current demand and consumption for oil and gas; therefore, it is too speculative at this time to conclude the proposed Project would have any overall net changes in GHG emissions from the use of such products. The CSLC has no control over the ultimate end products that may be produced from the oil from recommissioning PRC 421 and no authority to regulate GHG emissions from the use of such products.

Presently there is no State or federal standards established to govern GHG emissions. However, GHGs have been linked to global warming and its known environmental consequences. In combination with existing GHG emission inventories, construction and operation of the proposed Project would result in relatively small contributions of GHG emissions that would be cumulatively additive and incrementally exacerbate global warming effects. As provided above, implementation of MM AQ-1a, MM AQ-1b, MM AQ-2a, and MM AQ-2b would reduce Project GHG emissions. Indirect impacts from the use of the oil would generate GHGs; however, it is too speculative at this time to determine whether this Project would have any affect to current demand and consumption for oil and gas and result in any overall net changes in annual GHG inventories.